COVER SHEET

Multi- stakeholder assessment of critical success factors: insights from the world's fastest SAP R/3 implementation

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ABSTRACT

Organizations invest substantial resources in Enterprise Systems (ES) expecting positive outcomes for the organization and its functions. Implementing an ES is a lengthy and costly undertaking, with general upheaval for many of the organizations. Many organizations therefore are seriously considering rapid ES-implementations to reduce cost and other related resources. This paper presents findings of a study conducted to understand critical success factors of rapid ES-implementations gathering data from the world's fastest SAP implementation, completed in a record time of three weeks. Using a two-phased case study design, gathering data from four distinct stakeholders, this study recognized the relevance of critical success factors identified through the literature to the context of rapid ES-implementations. Moreover, the study identified three new critical success factors that are specific to rapid ES-implementations. The study also demonstrated differentiating views of multiple stakeholders on each of the critical success factors.
Keywords: Enterprise System, Rapid Implementation, Critical Success Factors

INTRODUCTION

A typical Enterprise System[1] (ES) implementation is an extensive, lengthy and costly process that is typically measured in millions of dollars (Pan et al. 2001). In recent years, organizations have embraced rapid ES-implementations as a mean of reducing resources and time related to implementations. Compared to traditional implementations, which take an average of two-three years, rapid implementations often completed within three to six months (Cameron 1998). The strong demand for rapid ES-implementation has lead ES vendors and consultants to introduce new implementation methodologies (e.g. Accelerated SAP). Though the existing Information Systems research makes a substantial contribution towards our knowledge of critical success factors of traditional ES–implementations, there is little discussion and emphasis placed on rapid ES-implementations. Unlike in traditional ES-implementations, rapid ES-implementations require organizations be extra cautious on the application of critical success factors, due to its resource intensity and shorter time period.

Furthermore, regardless of the implementation methodology, there is little evidence on how the ES stakeholders (henceforth referred to as the *employment cohorts* due to the intra-organizational

1 See Klaus, H., Rosemann, M., and Gable, G. "What Is ERP?," Information Systems Frontiers (2:2) 2000, pp 141-162.for in depth discussion

focus) place differentiating emphasis on the 'criticality' of each of the critical success factors. An Enterprise System, unlike a traditional Information System, entails many 'users' ranging from top executives to data entry operators. These employment cohorts typically have multiple and often conflicting objectives and priorities and rarely agree on a set of common aims (e.g. (Cameron et al. 1983; Quinn et al. 1983; Yoon 1995). Therefore, capturing these differentiating views of multiple employment cohorts on critical success factors is important, especially in relation to rapid implementations.

This paper reports findings of a study designed to address aforementioned gaps in the literature by gathering data from the world's fastest SAP implementation reported to-date. The study focuses on improving our understanding of the importance of critical success factors of rapid ES-implementation perceived by the four employment cohorts, namely, the strategic managers, middle managers, operational and technical staff in an organization. The paper proceeds as follows: The paper begins with a concise literature review on critical success factors and ES employment cohorts providing the necessary background of the study. The focus of the literature review, however, is not to make an extensive discussion on each of the critical success factors or employment cohorts, but simply to derive a preparatory list of critical success factors for critical success factors[2]. The research context is next described, followed by the research methodology. This study employs a two-phased case study approach with a mini-survey. The key findings of the paper are discussed next. The paper concludes with an outlook of the future directions.

LITERATURE REVIEW

Enterprise System Critical success factors

Critical success factors[3] have been a key topic in ES related research for over a decade. A large number of authors have suggested a wide array of critical success factors, some attempting to identify critical success factors relating to each of the ES lifecycle phases. Despite the important contributions of prior research, there is no common agreement in the 'relative criticality' of the success factors. For example, (Ke et al. 2004) suggest that 'leadership' is the most important success factor, while (Boon et al. 2004) in a review of twenty-one papers identified 'top management support' as the key critical success factor. (Esteves et al. 2001) made an important contribution to literature by classifying critical success factors according to strategic, tactical with organizational and technological perspectives.

This study adopted a combined classification of (Esteves et al. 2005) and (Nah et al. 2003) of eleven critical success factors (listed in table 1). The table lists all sub-factors relevant for each of critical success factors. These critical success factors and the related sub-factors provide the starting point for this research.

[2] For a detail discussion of Critical success factors refer to Esteves and Pastor (2005) and Nah et al., (2003)

[3] A Critical Success Factor was first defined by Daniel, D.R. "Management Information Crisis," Harvard Business Review (39:5) 1961, pp 111-121. and further refined by Rockart, J.F. "Chief Executives Define Their Own Data Needs," Harvard Business Review (57:2) 1979, pp 81-93., defines a critical success factor as: "The limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where things must go right for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired"

Critical success factor	References	Descriptor
Top Management Support 1. Approval and support 2. Identified project as a priority 3. Allocate resources	(Bingi et al. 1999; Buckhout et al. 1999; Holland et al. 1999; Murray et al. 2001a; Roberts et al. 1992; Shanks et al. 2000b; Sumner 1999)	The role of top management in ES-implementations include developing an understanding of the capabilities and limitations of the ES, establishing reasonable goals for ES, public and explicit exhibition of strong commitment to the successful introduction of ES, and communicating the corporate IT strategy to all employees.
Project Management 1. Assign responsibility 2. Establish and control project scope 3. Evaluate any proposed change 4. Control and assess scope expansion requests 5. Define & set project milestones 6. Enforce project timelines 7. Coordinate project activities across all affected parties	(Falkowski et al. 1998; Holland et al. 1999; Murray et al. 2001b; Rosario 2000; Shanks et al. 2003; Sumner 1999)	The vast combination of hardware and software and the myriad of organizational, human and political issues make many ES projects huge and inherently complex, requiring strong project management skills. A strong project management of scope is critical for such activities including assigning responsibilities, containing the scope, defining and evaluating project milestones to avoid schedule and cost overruns and necessitates having a plan and adhere to it.
Project Champion 1. Existence of project champion 2. High level executive sponsor as champion 3. Project Sponsor commitment	(Falkowski et al. 1998; Murray et al. 2001a; Rosario 2000; Shanks et al. 2000b; Stefanou 1999; Sumner 1999)	The success of technological innovations has often been linked to the presence of a champion who performs the crucial functions of transformational leadership, facilitation, and marketing the project to the users. Project champion/s should own the role of change champion for the life of the project and understand the technology as well as the business and organizational context.
Change Management 1. Recognizing the need for change 2. Enterprise-wide culture and structure management 3. User education and training 4. IT workforce re-	(Bingi et al. 1999; Falkowski et al. 1998; Holland et al. 1999; Murray et al. 2001b; Roberts et al. 1992; Rosario 2000; Shanks et al. 2000b)	Organizations need to adopt a comprehensive approach towards the large-scale process and system changes associated with ES implementations and make 'change' everyone's first priority. Activities one would undertake here include: user training and education and facilitate user involvement.

skilling 5. Commitment to change		
BPR[4] 1. BPR 2. Minimum Customizing	(Bingi et al. 1999; Holland et al. 1998; Murray et al. 2001b; Roberts et al. 1992; Shanks et al. 2000b)	In order to maximize ES benefits, some organizations undertake supplementary redesign of business processes to suit the ES, while some customize the ES. BPR in either way promises higher benefits, but also increases the level of complexity, risks and costs.
Communication 1. Targeted and effective communication 2. Communication among stakeholders 3. Expectations and progress communicated at all levels 4. User input	(Falkowski et al. 1998; Holland et al. 1999; Shanks et al. 2003; Sumner 1999)	In ES-implementations, communication among stakeholders to report project progress and user input and communicating project expectations to all stakeholders are important.
ES teamwork composition 1. Best people on team 2. Full-time team members 3. Partnership, trust, risk-taking and incentives 4. Empowered decision makers 5. Business and technical knowledge of team members and consultants	(Bingi et al. 1999; Buckhout et al. 1999; Falkowski et al. 1998; Shanks et al. 2000a; Sumner 1999)	The skills and knowledge of the project team, consist of the best employees in the organization, is important as is the use of consultants to provide expertise in areas where the internal team members lack of knowledge. It is also important that organizations select a balanced team and empower them to make rational decisions.
Business plan and vision 1. Business Plan or Vision 2. Project Mission or Goals 3. Justification for investment in ES	(Buckhout et al. 1999; Holland et al. 1999; Murray et al. 2001b; Shanks et al. 2000a)	Goals should be clarified so they are specific and operational, and to indicate the general directions of the project. These goals should seek top management support, justifying the ES investment. The "triple constraint" of project management specifies three often competing and interrelated goals that need to be met: scope, time, and cost goals.
Business and IT legacy systems 1. Business setting 2. Legacy system	(Holland et al. 1999; Roberts et al. 1992)	Key architectural considerations should be taken to optimize the use of legacy business and IT systems, decide on centralization or decentralization, compatibility of existing tools

[4] Business Process Re-engineering

		of the organization with the ES, and identification of bolt-on applications such as data warehouses.
Monitoring performance 1. Track milestones / targets 2. Performance tied to compensation 3. Analysis of user feedback	(Falkowski et al. 1998; Holland et al. 1999; Murray et al. 2001b; Roberts et al. 1992)	Evaluating progress of key milestones and targets using tangible and intangible aspects is important in an ES-implementation. Valuable user feedback and implementation team performance should then be tied to compensation.
Software development and testing 1. Configuration of overall ES architecture 2. Appropriate modelling methods and techniques 3. Vigorous and sophisticated testing 4. Troubleshooting 5. Integration	(Bingi et al. 1999; Buckhout et al. 1999; Holland et al. 1999; Murray et al. 2001b; Scheer et al. 2000)	Vigorous and sophisticated testing should be completed before the system goes live, using appropriate modelling method and techniques to ensure integration and intended functionality.

Table 1: Critical Success Factors

Enterprise System Employment Cohorts

The importance of gathering perceptions at multiple levels in organizations has been discussed among academics for several decades (e.g. (Cameron et al. 1983; Leidner et al. 1994; Sedera 2004; Tallon et al. 2000). (Anthony 1965) provided one of the key the foundations for employment cohort classification, identifying three levels of employment in an organization; (1) *Strategic* level, (2) *Management* level and (3) *Operational* level. The three levels of employment introduced by Anthony (1965) tend to be hierarchical on several dimensions: (1) time span of decisions (i.e. long, medium and short term), (2) importance of a single action (i.e. critical, important and common) and (3) the level of judgement (i.e. strong, moderate and modest). Table 2 adopted from Anthony (1965) summarizes the key characteristics of these employment cohorts.

(Singleton et al. 1988) used the employment classification of Anthony (1965) and concluded that contemporary organizations need a 'shared vision' across the ranks of employment. They emphasized the importance of gathering information from all employment levels to evaluate a portfolio of Information Systems.

Activity	Strategic	Management	Operational
Focus of Plans	Futuristic, One aspect at a time	Whole organization	Single task / transaction
Complexity	Many variables	Less complex	Simple, rule based
Degree of Structure	Unstructured, irregular	Rhythmic, procedural	Structured
Nature of Information	Tailor made, more external and predictive	Integrated, internal but holistic	Task specific, real time
Time Horizon	Long term	Long, medium to short	short

Table 2: Employment Cohorts and Related Tasks

In the ES implementation success literature, (Bancroft et al. 1998) identified, (1) effective communication across the employees of the organization, (2) selecting a balanced implementation team, and (3) providing adequate training for employees at all level of the organization as important success factors, emphasizing the importance of full representativeness across the employment cohorts. (Wu et al. 2002) examined satisfaction levels of Enterprise System users in Taiwan. They identified two main classes of stakeholders in ES implementations: an internal project team and an external contractor. Their research was conducted within the internal implementation team focusing on top managers, key users, end users and the MIS staff. Singletary, Pawlowski and Watson (2003) analysed qualitative data to illustrate the importance of gathering views on ES success from (1) managers, (2) IT professionals and (3) end users. (Shang et al. 2003) identified Technical staff as a separate and an important employment cohort in ES evaluation. Furthermore, they suggest that the management level employees are the most appropriate single cohort from which to gather perceptions of ES benefits. In summary, derived from the related literature, this study employs the following four employment cohorts: (1) strategic management, (2) management, (3) operational staff and (4) technical staff.

The aims of the data collection are to: (1) distil a salient list of critical success factors applicable to the context of rapid ES-implementations, (2) identify new critical success factors that were not considered in prior academic studies, (3) identify the relative criticality of critical success factors in rapid ES-implementations and (4) to understand the relative importance placed by each of the employment cohorts for each of the critical success factors. It should be highlighted that the scope of critical success factors, in this research, is not restricted to the 'go-live' date; rather it attempts to identify factors that are critical to effective usage of an ES[5].

THE RESEARCH CONTEXT

The research was conducted in a large finance and insurance company that had implemented SAP R/3 in a record-time of three weeks, making it the fastest SAP implementation to-date. Located in South-Asia, the case organization reported revenue of USD 40 million in 2004. The organization is highlighted as one of the fastest growing financial and insurance companies in South Asia. Assisted by a leading consultancy company[6] specializing in ES-implementations, the client organization

[5] A majority of prior studies have attempted to recognize critical success factors only until the ES go-live date.

[6] The name of the consultant company is suppressed, awaiting ethical clearance.

implemented the 'full-functionality[7]' of SAP Finance. The organization uses SAP Financials for aspects relating to: accounting, financial reporting, performance management, and corporate governance.

DATA COLLECTION

The exploratory nature and novelty of the research problem warranted the employment of the case study methodology. While a single case approach is generally not recommended, Yin (1994) argues that one of the rationale for a single case "… is one in which the case represents an extreme or unique case" (Ibid: p. 39). Aligning with the study objectives, the study was conducted in two phases. Figure 1 depicts the study design, with spheres representing main phases of activity and rectangles key inputs and outputs. A sample of the four employee cohorts (i.e. strategic managers, managers, operational and technical staff) participated in both phases of the study.

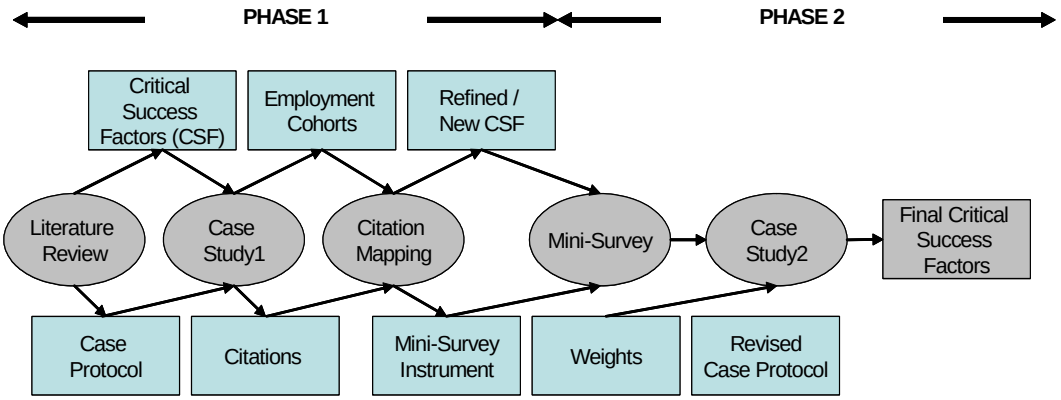

Figure 1: Study Design

The objective of phase 1 was to distil a salient list of critical success factors applicable to the context of rapid ES-implementations. The authors developed a case study protocol[8] using the critical success factor instrument of Nah et al., (2005). The round 1 case protocol and the related questionnaire contained a brief description of each of the success factors. Participants were then asked to instantiate the applicable factors to their experiences of rapid ES-implementation. The instantiated factors were considered important to the context of rapid ES-implementation and others inconsequential to the rapid ES-implementation context. However, unless the 'rejection' of a factor was unanimous with all four employment cohorts, respective factors were not removed. Phase 2 of the study was conducted in two stages: (1) mini-survey and (2) a series of case interviews. A sample of the four employment cohorts was involved in both phases. The purpose of the mini-survey is to quantify the criticality of each of the success factors, where the participants were asked to rate each of the factors using a rating scale of 5: ranging from *extremely critical to the ES-implementation* to

[7] Chief IT manager quoted.
[8] The case protocol is available upon request.

neither critical nor important to the ES-implementation was provided. The interviews sought explanations to the scores of the mini-survey[9].

Each interview lasted approximately two hours. In order to minimize biasness that might be introduced by the researchers into the analysis of the findings, various approaches as suggested by Yin (1994) and Lee (1989) were undertaken. This includes having each interview being taped and notes written down. The taped interviews and notes were transcribed by a third party, the results which were then reviewed. Participants were asked for clarification on vague or missing information. A Case Study Database, containing the taped interview, interview notes, transcribed data, is also maintained. To triangulate the findings of the case study transcripts, the authors followed the guidelines of Yin (1994) and Lee (1989) by gathering data from multiple sources. Table 3 demonstrates the number of participants for each phase. All case study participants are 'actively' involved in the SAP R/3 system at the case organization.

	Number of Participants				
Phases	**Strategic**	**Management**	**Operational**	**Technical**	**Total**
Phase 1 – Exploratory Case Study	2	3	3	4	12
Phase 2 – Mini Survey	4	7	20	8	39
Phase 2 – Case Interviews	1	1	1	1	4

Table 3: Number of participants

DATA ANALYSIS

In phase 1 of the study, all employment cohorts recognized the importance of four critical success factors. The four factors that perceived vital in phase 1 include: (1) Project Champion, (2) Top Management Support, (3) Project Management and (4) Change Management Programs. However, critical success factors relating to (1) Monitoring and Evaluation Performance and (2) Software Development and Troubleshooting were considered irrelevant for the rapid ES-Implementation, by the respondents. All other critical success factors received unanimous agreement from all employment cohorts and were perceived moderately important by the respondents.

Identification of New Critical Factors

As described earlier, one of the key emphases of this study is to identify critical success factors that are unique to rapid ES-implementations. In phase 1, participants identified three critical success factors that were not adequately addressed in prior literature, including; (1) vendor / consultant partnerships, (2) Use of vendor /consultant developed tools, and (3) knowledge management initiative.

All participants identified criticality of the vendor / consultant partnerships. It was revealed that the client organization has made intense negotiations with the consulting company to obtain technical and management support beyond the ES-implementation. A view advocated by (Davenport 2000; Davenport et al. 2000), consultant partnerships allows consultant companies to be 'lifecycle' partners in client organizations. Typically, the ES-lifecycle wide partners help client organizations

[9] Phase 3 of the research is planned and in-progress with a survey targeting a large number of participants.

beyond the go-live phase by involved in such activities like (not limited to) resolving software conflicts and issues, implementing software patches and upgrades, training and re-skilling of employees, business process engineering and change management activities. Such ES-lifecycle agreements assist organizations to complete ES-implementations rapidly without hindering day-to-day business operations and to move into other activities beyond the go-live date.

Use of vendor /consultant developed tools was the second new critical success factor identified in phase of this study. Attested by all employment cohorts in phase one data collection, the case organization highly valued the tools and methodologies brought in by the consulting company for the implementation of SAP. The consulting company used a methodology similar to the ASAP for understanding client requirements. Moreover, the consulting company brought in tools and methodologies that helped the client organization (1) communicate better, (2) understand user requirements and user profiles, (3) derive the business requirements, (4) assign key roles and responsibilities to implementation team members, and (5) evaluate the progress of key activities[10].

All four employment cohorts identified the importance of a knowledge management initiative within the organization. Though, managing ES knowledge has been identified as a critical success factor (Bingi et al. 1999; Davenport 1996; Davenport 1998a; Davenport 1998b; Gable et al. 1998; Sumner 1999), these studies emphasized only on the "Business and Technological Knowledge of Team Members and Consultant" (Nah et al., 2003). However, the participants of the case study emphasized the importance of not only the Business and Technological Knowledge of Team Members and Consultant, but also the procedures made to retain, transfer and re-use knowledge. Unlike in traditional ES-implementations, rapid ES-implementations require organizations be extra cautious on managing ES related knowledge[11]. Such organizations have a limited time to absorb the knowledge 'brought-to-bear' by the external consultants and the ES vendor. Retaining this knowledge of ES within the organization is paramount for maintenance and future upgrades, especially in rapid ES-implementations.

In Phase two of the study, the nine critical factors instantiated in phase one and the three new critical success factors were then organized into a semi-structured survey. The participants were asked to identify and record the relative criticality of each of the factors. The results depicted in table 4 demonstrate the scores of the mini-survey arranged according to the employment cohorts and the average score. Furthermore, the table depicts a rank of criticality for each of the critical success factors based on the average scores of each factor.

Figure 2 demonstrates differences in perceptions of the four employment cohorts in relation to the twelve critical success factors. It demonstrates that employment cohorts demonstrate significant differences in the level of agreement in some of the twelve critical success factors, while on others they show agreement.

[10] Further research is continuing on the impact of tools and methodologies used in the ES-implementation.

[11] Knowledge is defined as a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information (Davenport and Prusak 1998)

		Employment Cohorts					
		Strategic	**Mgmt**	**Operational**	**Technical**	**Final**	**Rank**
Critical success factors	#						
Top Management Support	Factor 1	4.75	4.8	4.8	4.78	4.78	1
Project Management	Factor 2	4.8	4.6	4.25	4.76	4.60	4
Project Champion	Factor 3	4.8	4.7	4.67	4.75	4.73	2
Change Management Culture and Program	Factor 4	3.5	4.5	4.2	3.1	3.83	8
Communication	Factor 5	3.2	3.2	3.5	3.1	3.25	11
ERP teamwork and composition	Factor 6	3.75	3.2	3.65	4.89	3.87	7
Business Plan and Vision	Factor 7	4.1	4.3	3.1	3.15	3.66	9
Appropriate Business and IT legacy systems	Factor 8	2.31	3.2	2.3	3.2	2.75	12
Business Process Re-engineering	Factor 9	3.9	3.1	3.22	3.52	3.44	10
Knowledge Management	Factor 10	4.9	4.65	4.45	4.35	4.59	5
Usage of vendor / consultant developed tools	Factor 11	4.13	4.2	4.32	5	4.41	6
Vendor / consultant partnerships	Factor 12	5	4.5	4.3	4.8	4.65	3

Table 4: Scores for Critical Success Factors

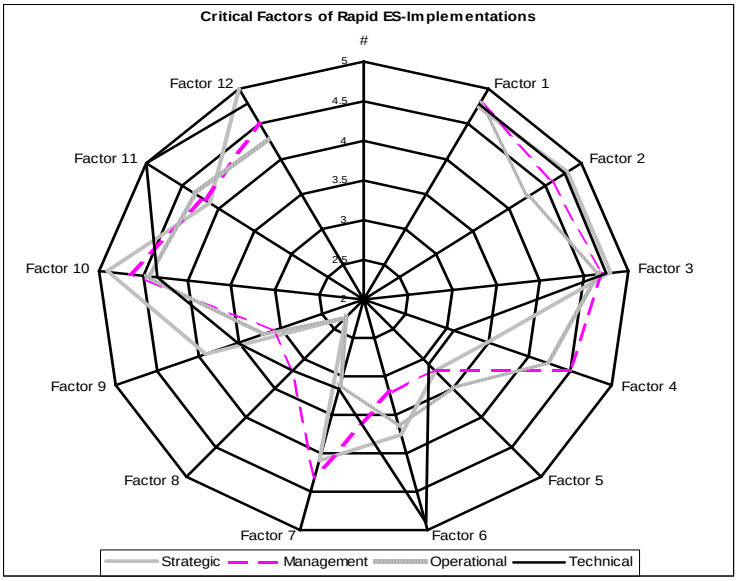

Figure 2: Critical Success Factors

Consistent with the literature, top management support (factor 1) and project champion (factor 2) received the highest rank with averages over of 4.7. The focus on the top management support is not surprising, given the short time period thus the high intensity of the implementation project. However, it was asserted in phase two interviews, that there were two senior managers and an

external consultant acted as 'project champions' representing the interests and solutions of both internal and external parties. Ranked at number 3 – vendor consultant partnerships – is a new critical success factor that was identified in phase one of this research. As discussed earlier, the client organization and the external implementation partners (particularly the consultants) have agreed on several vital aspects prior to the implementation that would specifically deliver training, system maintenance and performance monitoring.

Other critical success factors that received high ratings include: (4) project management, (5) knowledge management and the (6) Usage of vendor / consultant developed tools. Though the importance of project management has been discussed as a critical success factor (and obvious in a multi-mullion ES-implementation), as discussed earlier the importance of knowledge management and usage of vendor / consultant developed tools are unique to the rapid ES-implementations.

Factors such as Business Process Re-engineering (ranked 10), Communication (ranked 11) and Appropriate Business and IT legacy systems (ranked 12) were ranked low by all four employment cohorts. The case study interviews pointed out that in rapid ES-implementations, due to shorter implementation time and limited resources, it was impossible to engage in Business Process Engineering tasks. However, the case study respondents recognized the importance of Business Process Engineering, and as discussed earlier, have made provisions with the implementation partners. Ranked last, is the importance of Appropriate Business and IT Legacy systems. This aspect was not perceived important by the participants. The participants revealed that a direct technology swap between a legacy IS and ES, which is a key characteristic of a rapid implementation, the state of the legacy is not critical to the ES-implementation. Contrary to popular belief, communication was ranked second last. Considering the south Asian business and operational environment, it is our belief that some aspects of organizational culture may have contributed to lower than expected ranking of communication. For example, (Soh et al. 2000) in their comparative case studies, demonstrate how communication in Asian ES-implementations is lower compared to western countries. Using data depicted in figure 2, it is demonstrated the relative ranks of the four employment cohorts of the twelve critical success factors. It is evident that while some critical success factors received the same level of importance from all employment cohorts, some were perceived differently. All employment cohorts place a similar level of agreement on the critical success factors 1, 2, 3, but have demonstrated significant differences in relation to all other factors.

DISCUSSION

Information Systems literature has extensively discussed the importance of identifying critical success factors. This literature has made an important contribution by demonstrating relative criticality of critical success factors in traditional ES-implementation. However, studies addressing critical success factors of rapid ES-implementations are rare. This study was designed to achieve two related objectives (1) demonstrate the relative importance of critical success factors in a rapid ES-implementation and (2) depict differences perceived by four employment cohorts on each of the critical success factors.

Amongst the many important contributions of this study, it identified three new critical success factors related to rapid ES-implementations. The new factors identified include: (1) inclusion of on-going knowledge management procedures, (2) usage of vendor consultant developed tools, and (3) development of lifecycle-wide vendor / consultant partnerships. Though, the applicability of these factors is not tested in a traditional ES-implementation, it is quite conceivable the applicability of

them to a traditional ES-implementation. It is also evident that rapid implementations share common critical success factors with traditional ES-implementations, with such factors as (1) top management support, (2) project champion and (3) project management. In relation to the traditional view of having a single project champion, the rapid ES-implementation showed the importance of having multiple project champions to represent client needs and vendor/consultant solutions. Several factors regarded as critical in traditional ES-implementations found to be less/not important in a rapid ES-implementation. Such factors include (1) Business Process Re-engineering, (2) Communication, (3) and Appropriate Business and IT legacy systems.

FUTURE RESEARCH

Before fully endorsing the study findings, further research is recommended. For example, it is recommended that identification of critical success factors be extended to external implementation partners. ES-implementations require organizations to seek expertise beyond their organizations, typically entailing external consultants and software vendors in the implementation process. The differences in perceptions of critical success factors amongst these external stakeholders are rarely established and seldom reported in academic studies. Further empirical testing using a quantitative survey would enhance the confidence in critical success factors identified in the study. This would enable us to statistically assess the criticality of each of the factors towards a successful ES-implementation.

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